

# High School Mathematics Progress Monitoring

## **Standard 1: Number Sense** **Counting and quantity**

### **Demonstrates awareness of the presence of objects**

Shows displeasure when a desirable object is removed  
Shows pleasure when a desirable object is received  
Gives an object when asked.

### **Identifies more**

Demonstrates awareness of the presence of objects  
Indicates desire for "more"  
Identifies which amount is "more" (e.g. visually, tactilely, or auditorally)  
Gives more when asked  
Identifies which collection is "more" (e.g. visually, tactilely, or auditorally)

### **Uses numbers to compare**

Identifies more  
Uses whole numbers up to 5 to describe objects and experiences  
Touches or points to each object in a sequence only once  
Identifies when objects are the same number, even if arrangement is changed  
Identifies when a number of objects is "less" (e.g. visually, tactilely, or auditorally)

### **Names and orders quantities**

Uses numbers to compare  
Identifies the next number in a series of numbers  
Identifies "first" and "last"  
Gives "the rest" when asked  
Uses drawings to represent quantity and numbers  
Counts a number of objects up to 10.

### **Describes relationships between numbers and quantity**

Names and orders quantities  
Counts a number of objects up to 20.  
Recognizes, represents, and names a number of objects up to 10.  
Uses concepts of "most" and "least"  
Uses concepts of "all" "none" "some"  
Orders a number of objects up to 10.

### **Identifies numbers and quantity to 100**

Describes relationships between numbers and quantity  
Counts to 100  
Recognizes whole numbers to 100  
Counts and groups objects in ones and tens  
Identifies numbers up to 100 in various combinations of ones and tens  
Names the number that is one more than any number less than 100.  
Names the number that is one less than any number less than 100.  
Compares whole numbers up to 10 and arranges them in numerical order.  
Writes numbers up to 100

### **Identifies numbers and quantity to 1000**

Identifies numbers and quantity to 100  
Counts whole numbers to 1,000.  
Reads and writes whole numbers to one thousand.  
Uses words, models, and expanded form to represent numbers up to 1,000.  
Identifies numbers up to 1,000 in various combinations of hundreds, tens, and ones.

### **Compares numbers on a number line**

Identifies numbers and quantity to 1000

Uses number lines to describe number relationships.

Uses numbers in between whole numbers.

Plots and labels whole numbers on a number line up to 10.

Illustrates that if 0 and 1 are located on a line, any other number can be depicted as a position on the line.

Identifies "0" as a value in some situations and as a label of some point on a scale in other situations.

Plots and labels whole numbers on a number line up to 100.

Estimates positions on a number line.

Identifies on a number line the relative position of simple positive fractions, positive mixed numbers, and positive decimals.

Represents on a number line positive and negative integers, fractions, and decimals to hundredths.

Interprets the absolute value of a number as the distance from zero on a number line, and finds the absolute value of real numbers.

### **Compares parts and whole**

Compares numbers on a number line

Communicates when a snack is split in "half"

Divides sets of 10 or fewer objects into equal groups.

Divides shapes into equal parts.

Recognizes when a shape is divided into congruent (matching) parts.

Recognizes fractions as parts of a whole or parts of a group (up to 12 parts).

Includes all fractional parts to equal the whole and represents this with the number one.

Renames and rewrites whole numbers as fractions.

Names and writes mixed numbers using objects or pictures.

Names and writes mixed numbers as improper fractions using objects or pictures.

Writes tenths and hundredths in decimal and fraction notations.

Interprets fractions as parts of a whole, parts of a set, and division of whole numbers by whole numbers.

Interprets percents as part of a hundred.

### **Names and orders fractions and decimals**

Compares parts and whole

Given a set of objects or a picture, names and writes a decimal to represent tenths and hundredths.

Given a decimal for tenths, shows it as a fraction using a place-value model.

Names and writes mixed numbers using objects or pictures.

Names and writes mixed numbers as improper fractions using objects or pictures.

Writes tenths and hundredths in decimal and fraction notations.

Arranges in numerical order and compares whole numbers or decimals to two decimal places.

Finds decimal and percent equivalents for common fractions and explains why they represent the same value.

Compares positive and negative integers, fractions, decimals (to hundredths) and mixed numbers.

Converts between any two representations of numbers (fractions, decimals, and percents) without the use of a calculator.

Recognizes decimal equivalents for commonly used fractions without the use of a calculator.

### **Compares costs related to shopping**

Names and orders fractions and decimals

Demonstrates the ability to shop.

Participates in aspects of the shopping experience with assistance

Independently manages shopping

Budgets resources to meet objectives.

Recognizes that money is exchanged for wants and needs

Accepts when things cannot be afforded

Interprets percents as part of a hundred.

Solves real-world problems involving addition.

Solves real-world problems involving subtraction.

Solves real-world problems involving multiplication.

Solves real-world problems involving division.

## **Standard 1: Number Sense**

### **Computation**

#### **Manipulates objects for a purpose**

Pulls or breaks apart food.

Lines up objects

Attends to a new object in a group of objects

#### **Matches objects and sets**

Manipulates objects for a purpose

Puts pairs together

Matches sets of objects one-to-one

Uses the term "same"

#### **Makes a set of objects smaller or larger**

Matches objects and sets

Makes a collection of items larger by adding items when asked.

Makes collections of items smaller by taking items away when asked.

Identifies "one more" "one less"

Describes addition and subtraction situations for numbers less than 3

#### **Follows models of addition or subtraction situations**

Makes a set of objects smaller or larger

Creates a collection equal to objects in a collection already constructed.

Describes addition situations for numbers less than 5.

Describes subtraction situations for numbers less than 5.

Uses the term "half"

Uses the term "whole" when combining a whole quantity of something

#### **Describes the application of addition and subtraction situations**

Follows models of addition or subtraction situations

Finds the number that is one more than any whole number up to 10

Finds the number that is one less than any whole number up to 10

Compares sets up to 10 objects and determines if they are equal

Models addition/subtraction by joining sets of objects (for any two sets with fewer than 10 objects when joined)

Divides sets of 10 or fewer objects into equal groups.

Makes precise calculations and checks validity of results in context of problem

#### **Demonstrates fluency with addition and subtraction facts**

Describes the application of addition and subtraction situations

Shows the meaning of addition (putting together, increasing) using objects

Counts forward from a number to find out total number in group.

Adds numbers with sum less than 10.

Uses zero in addition problems

Demonstrates mastery of addition facts for totals up to 10

Demonstrates mastery of addition facts for totals from 11 - 20.

Shows the meaning of subtraction (taking away, comparing, finding the difference) using objects.

Demonstrates mastery of subtraction facts with totals up to 10

Demonstrates mastery of subtraction facts with totals from 11 - 20

Uses zero in subtraction problems

Uses symbols "+" and "-"

Uses the symbol "="

Uses the inverse relationship between addition and subtraction to solve problems

Adds three numbers with sum less than 10.

Writes and solves number sentences from problem situations involving addition and subtraction

### Adds and subtracts up to 100

Demonstrates fluency with addition and subtraction facts

Models the addition of numbers less than 100 with objects and pictures.

Uses mental arithmetic to add 0, 1, 2, 3, 4, 5, or 10 with numbers less than 100.

Uses mental arithmetic to add with numbers less than 100.

Adds two whole numbers less than 100 without regrouping.

Adds two whole numbers less than 100 with regrouping.

Subtracts two whole numbers less than 100 without regrouping.

Subtracts 2-digit number from a 2-digit number with no regrouping.

Subtracts two 2-digit numbers regrouping ones.

### Models multiplication and division of whole numbers

Adds and subtracts up to 100

Use computation strategies to solve multiplication problems.

Makes sets of a given number.

Starts with a known fact.

Uses twice as much.

Skip counts.

Uses half as much.

Multiplies by ten then adjusts.

Shows multiplication as a function of an array.

Represents the concept of multiplication as repeated addition.

Uses repeated subtraction to solve a division problem.

Represents as division any situation involving the sharing of objects or the number of groups of shared objects.

Uses the inverse relationship between multiplication and division.

### Demonstrates fluency of multiplication and division facts up to 10

Models multiplication and division of whole numbers

Demonstrates mastery of multiplication facts for 2, 5, and 10.

Demonstrates mastery of the multiplication tables for numbers between 1 and 10.

Uses mental computation strategies to solve multiplication problems.

Demonstrates mastery of division facts for multiplication tables up to 100 by numbers up to 10.

Uses mental computation strategies to solve division problems.

### Adds and subtracts money in decimal notation

Demonstrates fluency of multiplication and division facts up to 10

Adds decimals to hundredths using objects or pictures.

Adds decimals to hundredths using standard algorithms.

Adds decimals.

Adds fractions to solve problems.

Subtracts decimals to hundredths using objects or pictures.

Subtracts decimals to hundredths using standard algorithms.

Subtracts decimals.

Subtracts fractions to solve problems.

### Applies computation to consumer applications

Adds and subtracts money in decimal notation

Considers reasonable personal trade-offs among consumer products on the basis of features, performance, durability, and costs.

## **Standard 2: Geometry and Measurement**

### **Time**

#### **Anticipates a routine**

Cooperates with routines

Anticipates an event in a sequence during daily activities

Prepares for something anticipated

Associates familiar events with concrete objects (e.g. blanket for bedtime)

Follows along with a simple routine

#### **Uses vocabulary to identify events in a routine**

Anticipates a routine

Responds to now, next, done

Responds to "one more..." (time, book)

#### **Sequences events**

Uses vocabulary to identify events in a routine

Independently completes an activity that requires 3 things be done in sequence

Tells 3 events in chronological order.

Differentiates past and future events

Identifies first and last events

#### **Uses vocabulary that measures time**

Sequences events

Uses concepts of morning, afternoon, night, today, tomorrow

Uses concepts of today, yesterday and tomorrow.

#### **Uses measuring units for time**

Uses vocabulary that measures time

Uses the terms week, month, year

Uses the terms minute, hour, day

#### **Tells time to the nearest hour**

Uses measuring units for time

Reads numerals 1-12 on a clock face.

Uses the clock as a tool to measure time.

Explains that clocks are used to measure time.

Identifies the hour hand on a clock.

Identifies the minute hand on a clock.

Identifies the second hand on the clock.

Matches clock face to its digital representation.

Reads and writes digital clock times.

Uses AM/PM.

#### **Tells time to the fraction of the hour**

Tells time to the nearest hour

Tells time to the nearest half hour using a clock with hands.

Tells time to the quarter hour using a clock face.

Tells time to the nearest 5-minute interval.

Relates the number of minutes to an hour.

Relates the number of hours to a day.

#### **Tells time to the minute**

Tells time to the fraction of the hour

Identifies the minute hand on a clock.

Relates the number of seconds to a minute.

Tells time to the nearest 5-minute interval.

Tells time to the nearest minute.

### **Calculates elapsed time**

Tells time to the minute  
Compares elapsed time using shorter/longer.  
Demonstrates elapsed time.  
Finds how much time has elapsed to the nearest minute.  
Measures and calculates time.

### **Calculates time intervals in hours and minutes**

Calculates elapsed time  
Finds how much time has elapsed to the nearest minute.

### **Solves simple problems involving rates**

Calculates time intervals in hours and minutes  
Compares the ways different things move.  
Estimates, measures, calculates and compares speed and motion.  
Solves problems involving interest earned and tips.  
Calculates given percentages of quantities.  
Solves problems that involve discounts.  
Solves problems that involve markups, and commissions.  
Calculates the percentage increase and decrease of a quantity.

## ***Standard 2: Geometry and Measurement***

### **Length, capacity, weight, temperature**

#### **Explores measurement attributes**

Pours substances in and out of containers  
Responds to hot and cold  
Responds to "all done" "want more"  
Responds to "one more..." (e.g. time, book)

#### **Distinguishes between big and little, hot and cold**

Explores measurement attributes  
Distinguishes between big and little  
Makes choices based on size  
Communicates feelings of hot and cold  
Communicates size of things relative to self  
Uses descriptive word or gesture to express amount or size

#### **Differentiates gradients of size and weight**

Distinguishes between big and little, hot and cold  
Orders 3 objects by size  
Assembles a set of nesting objects  
Recognizes which object is lighter/heavier  
Recognizes which object is warmer/cooler  
Recognizes which object can hold more  
Recognizes which object is shorter, longer, or taller

#### **Uses common measuring tools in correct context**

Differentiates gradients of size and weight  
Uses a cup to act out a measurement of capacity  
Uses a ruler to act out a measurement of length or height  
Uses a scale to act out a measurement of weight  
Uses a thermometer to act out a measurement of temperature

### **Makes direct measurement comparisons**

Uses common measuring tools in correct context

Makes direct comparisons of length

Makes direct comparisons of capacity

Makes direct comparisons of weight.

Makes direct comparisons of temperature

### **Measures units of length, capacity, weight and temperature**

Makes direct measurement comparisons

Compares and orders objects according to weight.

Measures the length of objects by repeating a non-standard unit or a standard unit.

Uses different units to measure the length of the same object and predicts whether the measure will be greater or smaller when a differ

Estimates weight and uses a given object to measure the weight of other objects.

Estimates and measures weight using pounds and kilograms.

Estimates/finds the volume of objects by counting the number of cubes that would fill them.

Estimates and measures capacity using cups.

Estimates and measures capacity using pints.

Uses fractional marks on measuring cups.

Estimates and measures capacity using quarts, gallons, and liters.

Measures and mixes dry and liquid materials in prescribed amounts.

Illustrate how length can be thought of as unit lengths joined together.

Estimates and measures length to the nearest inch

Estimates and measures length to the nearest foot.

Measures and estimates length to the nearest yard.

Measures line segments to the nearest half-inch.

Measures length to the nearest quarter inch.

Measures length to the nearest eighth inch.

Measures and estimates length to the nearest centimeter

Estimates and measures length to the nearest meter.

Measures length to the nearest millimeter.

Relates pounds and kilograms to smaller and larger units for measuring weight.

### **Selects appropriate units to estimate and measure**

Measures units of length, capacity, weight and temperature

Uses the conventional language for units of measurement in the correct context.

Select and use appropriate measuring units.

Selects and applies appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of an

Chooses appropriate units when reading analog and digital meters.

Determines in what unit an answer should be expressed based on the units of the inputs to the calculation.

### **Carries out simple conversions of units (e.g. inches to feet)**

Selects appropriate units to estimate and measure

Adds units of length that may require regrouping of inches to feet or centimeters to meters.

Describes the relationship of inch, foot, and yard.

Describes the relationship of centimeter and meter.

Decides which unit of length is most appropriate in a given situation.

Select and use appropriate measuring units.

Carries out simple unit conversions within a measurement system.

Subtracts units of length that may require renaming of feet to inches or meters to centimeters.

Describes the relationship of inch to centimeter.

Describes the relationship of yard to meter.

Compares miles to yards.

Compares acres and square miles to square yards.

### Measures perimeter

Carries out simple conversions of units (e.g. inches to feet)

Demonstrates perimeter.

Determines size and shape of room using a perimeter pattern.

Finds the perimeter of quadrilaterals.

Measures rectangles with appropriate tools.

Measures triangles with appropriate tools.

Solves problems involving perimeters of rectangles, triangles, parallelograms, and trapezoids using appropriate units.

### Measures area

Measures perimeter

Compares and orders objects according to area.

Estimates area and uses a given object to measure the area of other objects.

Estimates/finds the area of shapes by covering them with squares.

Estimates and calculates the area of rectangular shapes by using standard units.

Shows that rectangles with the same area can have different perimeters and that rectangles with the same perimeter can have different areas.

Finds areas of more complex shapes by dividing them into basic shapes such as rectangles and triangles.

Finds the surface area of rectangular solids using appropriate units.

Uses technology to determine area from linear dimensions.

Uses strategies to find the surface area and volume of right prisms and cylinders using appropriate units.

### Applies measurement calculations to solve a simple problem

Measures area

Estimates and measures capacity using cups and pints.

Uses map scale to calculate relative distance.

Estimates and measures capacity using quarts, gallons, and liters.

Measures and mixes dry and liquid materials in prescribed amounts.

Finds the difference between two quantities of anything.

Solves problems involving the area of rectangles.

Uses two-dimensional patterns to compute the surface area of objects.

## **Standard 2: Geometry and Measurement**

### **Sorting, classifying and constructing**

Explores attributes (e.g. shape, size, color)

Attends to visual, auditory, tactile patterns

Shows interest in something out of place (e.g. finding a small object on the carpet)

Uses a shape toy to explore basic shapes

Puts smaller objects into larger holes, slots or depressions

### Matches same attributes

Explores attributes (e.g. shape, size, color)

Matches squares, circles

Matches rectangles, triangles

Identifies when objects are the same.

### Matches opposites

Matches same attributes

Puts together pairs of pictures of opposites

Names the opposite of a given quality

Identifies objects that do not belong to a particular group

## Sorts and patterns by one attribute

Matches opposites

Names groups of objects according to the common attribute

Identifies geometric shapes (e.g. circles, triangles, squares, rectangles, cubes)

Puts objects into groups with the similar attribute

Identify and sort common words in basic categories

Copies simple patterns with numbers and shapes

Identifies patterns.

Predicts what comes next when shown a simple AB pattern of objects

Compares and sorts by roundness

Compares and sorts by number of corners

## Sorts and patterns by more than one attribute

Sorts and patterns by one attribute

Groups familiar items by classification and function

Gives reasons for sorting of objects

Identifies categories of objects in pictures

Sorts and classifies objects by size and shape

Compare and sort common objects by position, roundness and number of vertices

Creates patterns of more than one attribute

Reproduces patterns of sounds and movement

## Describes attributes of common shapes

Sorts and patterns by more than one attribute

Identifies attributes of objects.

Identifies and describes circles

Identifies and describes triangles

Identifies and describes squares

Identifies and describes rectangles

Identifies shapes as being two- or three-dimensional.

Identifies and describes cubes.

Identifies and describes quadrilaterals.

Identifies and describes parallelograms.

Identifies and describes rhombuses.

Identifies and describes trapezoids.

Identifies and describes polygons.

Classifies triangles as equilateral, isosceles, scalene, right, acute, obtuse and equiangular.

## Identifies and draws parallel and perpendicular lines

Describes attributes of common shapes

Uses points, lines and line segments in describing two-dimensional shapes.

Identifies and describes rays.

Identifies and describes parallel lines.

Identifies and describes perpendicular lines.

## Constructs geometric shapes

Identifies and draws parallel and perpendicular lines

Draws or models shapes

Constructs squares, rectangles, and triangles with appropriate materials.

Draws parallelograms, rhombuses and trapezoids.

Creates polygons.

Draws triangles from given information about them.

Draws quadrilaterals from given information about them.

Applies the identification of angles and geometric shapes in daily life

Constructs geometric shapes

Demonstrates how geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, & stories can be used to represent concepts in the real world.

### **Standard 3: Algebra and Functions**

#### **Data display**

Demonstrates an awareness of location of objects

Tracks movement

Responds to objects in the environment

Looks or feels for an object or sound that is hidden

Puts things in and out of other things

Identifies one body part

Identifies location

Demonstrates an awareness of location of objects

Identifies where he/she is currently located

Locates a hidden object or sound

Responds to "here" and "there"

Identifies the location of 3 body parts

Follows directions involving location

Identifies location

Follows instructions to put an object in a different place (room, space)

Follows instructions to place an object in, out, on or off of something

Follows directions involving 5 body parts

Communicates with location words

Follows directions involving location

Uses "beside" or "next to"

Answers "where is..." questions

Asks "where is..." questions

Uses prepositions to describe location

Communicates with location words

Uses prepositions - inside, outside, between, above, below

Compares and sorts objects by position

Uses ordinal numbers to describe order (e.g. 3rd)

Uses prepositions to describe location

Identifies objects by ordinal position.

Matches the ordinal number names (1st, 2nd, 3rd, etc.) with an ordered set of up to ten items.

Matches ordinal number name (first, second, third, etc.) with an ordered set containing up to 100 elements.

Identifies location using a number line

Uses ordinal numbers to describe order (e.g. 3rd)

Compares numbers on a number line

Given a 2-digit number and using the model of a number line, identifies the nearest ten.

Uses number lines to describe number relationships.

Plots and labels whole numbers on a number line up to 10.

Plots and labels whole numbers on a number line up to 100.

Estimates positions on a number line.

### Identifies location using two coordinates

Identifies location using a number line

Records and organizes information using pictures.

Represents data using pictures and picture graphs.

Collects, records and represents numerical data in systematic ways.

Collects data to make a picture or bar graph.

Creates a bar graph, given a set of data.

Constructs tables and graphs to show how values of one quantity are related to values of another.

Uses latitude and longitude to describe the location of places on the globe.

Finds ordered pairs of positive numbers that fit in a linear equation, graphs the ordered pairs, and draws the line they determine.

Identifies and graphs ordered pairs of positive numbers.

Finds the horizontal distance between two points on a coordinate plane given that the y-coordinate is the same in both pairs.

Finds the vertical distance between two points on a coordinate plane given that the x-coordinate is the same in both pairs.

### Uses simple tables to display information

Identifies location using two coordinates

Recognizes charts and graphs as a way of collecting, organizing, recording, and describing information.

Organizes information using objects.

Uses a tally system.

Represents data in tables, including frequency tables.

Organizes information in simple tables and graphs and identifies relationships they reveal.

Makes frequency tables for numerical data, grouping the data in different ways to investigate how different groupings describe the data

### Interprets simple graphs

Uses simple tables to display information

Compares and interprets data using pictures and picture graphs.

Compares and interprets information from tables, charts, and graphs.

Interprets data displayed in a circle graph.

Uses information taken from a graph to answer questions about a problem situation.

Demonstrates how graphical displays of numbers may make it possible to spot patterns that are not otherwise obvious, such as compa

Interprets tables and graphs representing a given situation.

### Makes calculations based on displayed information

Gives estimates of numerical answers to problems before doing them formally.

Finds out about a group of things by studying just a few of them.

Identifies and analyzes the possible bias in a sample or display.

Makes conjectures and estimates.

Finds the mean, median, mode, and range of a set of data.

Finds relative and cumulative frequency for a data set.

Uses graphing to estimate solutions and check the estimates with analytic approaches.

Compare the mean, median, and mode of a data set in given contexts.

Describes how additional data, particularly outliers, added to a data set may affect the mean, median, and mode.

Makes predictions from statistical data.